THE RICE STRAW DEMONSTRATION PROJECT FUND

Proposed Grant Awards

For Fiscal Year 1999-2000

Release Date: May 15, 2000

California Environmental Protection Agency

Air Resources Board

Planning and Technical Support Division

California Environmental Protection Agency
AIR RESOURCES BOARD
Planning and Technical Support Division

Public Meeting to Consider the Fiscal Year 1999-2000 Grant Awards for the Rice Straw Demonstration Project Fund

Date of Release: May 15, 2000

Scheduled for Consideration: May 25, 2000

Location:

Air Resources Board
Board Hearing Room
2020 L Street
P.O. Box 2815
Sacramento, CA 95812

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SUMMARY

Senate Bill 318 (1997, Thompson) created the Rice Straw Demonstration Project Fund (the Rice Fund) and directed the California Air Resources Board to administer it. The goal of the Rice Fund is to help create a market for Sacramento Valley rice straw by providing cost-sharing grants for projects which show the greatest potential for becoming commercially self-sustaining users of rice straw.

Seven grant requests were received for fiscal year 1999-2000 funding. Grant requests were evaluated by expert reviewers using the funding criteria (see page 3) adopted by the Board at its January 29, 1998, public meeting. Six of the grant applicants presented their proposals at an April 25, 2000, public meeting.

The review panel consisted of three business experts, four technology experts, and one rice straw expert. Based on the results of the review process, staff recommends that the Board award grants to the following five projects:

"Evaluation and Delivery of Rice Straw Needed for Gridley Ethanol Plant's Startup Year of Operation" by Rice Straw Cooperative for a grant award of $380,000;

"Development of a Commercial Scale Composting Plant in Colusa County" by Broken Box Ranch for a grant award of $297,589;

"Rice Straw Export Project" by Kuhn Hay, a California Corporation for a grant award of $402,311;

"Rice Straw Silage Production for Cattle Feed" by Smith Ranches for a grant award of $50,100; and,

"*Production of Ethanol From Rice Straw"* by Arkenol Holdings, L.L.C., for a grant award of $100,000.

We are not recommending funding for two of the grant proposals received. The two proposals are:

"Fibex-treated Animal Feeds and Ethanol From Sacramento Valley Rice Straw: Production and Commercial Assessment," submitted by MBI International to evaluate rice straw for dairy cattle feed and for ethanol production; and,

"Biomass to Ethanol Facilitation Analysis," submitted by Sierra Economic Development District to survey availability of biomass for ethanol production.

Although reviewers recognized the merits of the MBI International proposal, they did not rate it as high as the other projects they reviewed. Also, ARB provided an $820,000 grant to MBI under a previous 1997-1998 round of rice fund grants. We believe that this preliminary work needs further development prior to granting of additional funds. Reviewers did not think the Sierra Economic Development District proposal met the objectives of the grant criteria. It did not propose to use any rice straw and commercialization objectives were unclear. The executive summaries of these two projects are presented in Appendix A.

A total amount of $1.23 million is being recommended for this fiscal year's grants. Project descriptions, evaluation summaries, and project executive summaries are presented for the five proposals being recommended.

FUNDING CRITERIA USED TO EVALUATE RICE FUND GRANT REQUESTS

Grant requests were evaluated using the criteria listed below. The criteria used for making the recommendations were adopted by the Board at its January 29, 1998, public meeting. These criteria are described in the February 2, 2000, ARB report: "The Rice Straw Demonstration Project Fund -- Program Description and Invitation for Grant Requests, Fiscal Year 1999-2000," which is included as Appendix B of this report.

Technical Plan Review:

- Viable technology for utilization of rice straw
- Reasonable and complete project
- Stage of technology development
- Technical competency of project team

Business Plan Review:

- Business merit and commercialization plan
- Straw supply plan
- Financial support and credit integrity
- Business competency of project team

Program Goals Satisfaction:

- Potential quantity of rice straw to be used annually
- Length of time to self-sustaining operation
- Project location and replication potential
- Local community support

Policy Assessment:

- Policy assessment
- Environmental effects

RECOMMENDED GRANT AWARDS

Following are discussions of the five projects that the staff recommends that the Board fund. Each discussion includes: the applicant's name, the recommended grant amount, the project timeline, the five-year rice usage outlook, the staff's description of the project, and a summary of the review team's assessment of the project. Following these elements of each project is an executive summary of the project that was written by the project proponent.

Title*: "Evaluation and Delivery of Rice Straw Needed for Gridley Ethanol Plant's Startup Year of Operation"*

Applicant: Rice Straw Cooperative **Grant Amount: $380,000**

Straw used after Five years: 75,000 to 300,000 tons per year **Project time: Two years**

Proposal Summary

This project will achieve two primary outcomes. First, it will evaluate the degradation of stored rice straw and its effectiveness for making ethanol. The findings of the evaluation will be used to support financing of the BC International (BCI) Gridley Ethanol Project. The second outcome will be to establish the Rice Straw Cooperative (RSC) as a supplier of rice straw for the BCI Gridley Ethanol Project. The grant will help the RSC to bale, store, and deliver 18,000 bone-dry tons (BDTs) of rice straw for the start-up of the BCI Gridley Ethanol Plant, scheduled for May 2002. The RSC has signed an agreement with BCI to deliver a minimum of 75,000 BDTs of rice straw to the proposed Gridley Ethanol Project by the September 2002 project start-up date. The project will take two years to complete.

The RSC project team consists of the RSC -- an eight member rice farmer cooperative that bales, stores, and markets rice straw, BCI Corporation – a Gridley Ethanol Project proponent, and TSS Consultants – a consulting firm that specializes in conducting feasibility studies for locating new biomass facilities.

Evaluation Summary

The BCI Gridley plant will produce 23 million gallons of ethanol per year when in full operation. This will help to meet a 150 million to 1 billion gallon per year ethanol market in California when the phase-out of MTBE occurs in January 2003. Reviewers thought the project proposal offered a sound approach for providing a dependable supply of rice straw for the start-up of the BCI Gridley Ethanol Plant. Although the original RSC proposal requested $788,430 to deliver 37,000 BDTs of rice straw, reviewers thought the same objectives could be obtained with about half the funding. A scaled down proposal will allow for the evaluation of stored rice straw as well as the collection and delivery of 18,000 BDTs of rice straw to the Gridley plant. If additional costs for financial closure are incurred, reviewers thought that they should be born by the project proponents.

The RSC and BCI have committed to contribute $380,000 to the project. We recommend that the RSC be awarded a matching grant of $380,000 for a project of two years' duration.

"Evaluation and Delivery of Rice Straw Needed for Gridley Ethanol Plant's Startup Year of Operation"

EXECUTIVE SUMMARY
Provided by Rice Straw Cooperative

The applicant for the Evaluation and Delivery of Rice Straw is the Rice Straw Cooperative of Biggs, California. The Project Objective is to collect the inventory of rice straw needed for first year operation of the proposed Gridley Ethanol Project, located in Butte County.

The Rice Straw Cooperative has signed agreements to deliver a minimum of 75,000 Bone Dry Tons (BDT) or 86,000 green tons of rice straw to the proposed Gridley Ethanol Project. During the first year start up operation, the Gridley Ethanol Project will need approximately 37,000 BDT of rice straw in inventory prior to that year's rice harvest. Under this proposal, the Rice Straw Cooperative proposes to collect and deliver to the Gridley Ethanol Project 18,000 BDT of the inventory needed for startup operations.

The Rice Straw Cooperative Project is $760,000 and is requesting $380,000 in cost share funds from the 2000 Rice straw Demonstration Project Fund. The Rice Straw Cooperative and BC International will invest the remaining $380,000 during the project period. The Rice Straw Cooperative will contract for the collection, processing and transportation of the rice straw and to lease property for the storage of the rice straw for delivery to the Gridley Ethanol Project site in Oroville. The estimated annual operating budget for each year is included. The annual operating budget assumes the fixed assets are leased or rented by the Rice Straw Cooperative at fair market value.

The information provided in the business plan indicates that the BCI Gridley Ethanol Project will have a cash cost to produce ethanol of $0.58 per gallon. The cost to produce ethanol including feedstock cost is $0.84 per gallon with an assumed feedstock cost of $20 per BDT. The Project assumes a sale price for fuel ethanol of $1.30 per gallon.

This 1991 Rice Straw Reduction Act was amended in 1997, to create a "pause" in the phase down of rice straw burning. The amendments allowed a continuation of burning up to 50 percent of the planted rice acreage, with a maximum limit of 200,000 acres annually, with only 90,000 acres allowed to be burned in the fall, subject to the acreage allocations of the Sacramento Valley Agricultural Burning Program. The final phase after the three year "pause" will allow burning only for disease control, and be limited to 25 percent of the planted acreage or 125,000 acres, whichever is less. For rice

growers, this means, a significant increase in the cost of doing business. Instead of $1.50 to 3.00 per acre for burning of rice straw, the costs will likely average $35 per acre. This economic impact can affect the future of the rice industry in California.

As a result, some rice growers in the Butte County and surrounding areas began investing time and money in alternative ways of disposing or rice straw. Because of the proposed Gridley Ethanol Project in their area, the Rice Straw Cooperative was formed to pool their resources for disposing of rice straw. An agreement was signed between the Rice Straw Cooperative and the BCI Gridley Ethanol Project, LLC committing to long-term delivery of rice straw to the project. These Butte County rice growers recognized that to do nothing could affect the future viability of their businesses. This proposal is for the California Air Resources Board to cost share with the growers and the Gridley Ethanol Project developers, the initial collection costs of a portion of the first years operational start-up needs for rice straw.

Title: ***"Development of a Commercial Scale Composting Plant in Colusa County"***

Applicant: Broken Box Ranch **Grant Amount: $297,589**

Straw used after Five years 50,000 tons per year **Project time: Two Years**

Proposal Summary

The Broken Box Ranch project proposes to develop a commercial-scale in-vessel composting plant in Colusa County. Rice straw and livestock waste will be mixed in a 60:40 ratio and placed in a vessel composting system for about 100 days to aerobically decompose the organic matter. The product will utilize state of the art composting technology and will complement the regional dairy industry by utilizing nitrogen rich livestock waste in a 30:1 carbon to nitrogen ratio for optimal compost production. The project will be located outside of Williams, California, and the organic compost will be sold in bulk to the increasing number of organic rice growers within a 25-50 mile radius who are looking for alternative soil amendments to expensive chicken manure. The product will initially sell for about $25/ton which is about half the price of chicken manure. The project proposes to use 15,000 tons of rice straw in the first year and 50,000 tons within four years. The Broken Box Ranch demonstration project will take two years to complete, and, if successful, could result in the development of sister plants in other locations capable of utilizing a collective total of about 100,000 tons per year of rice straw.

The Broken Box Ranch project team consists of Mr. Jerry Maltby, a rice and cattle farmer with over 30 years of experience, and Cynthia Daley, Ph.D., College of Agriculture, California State University, Chico.

Evaluation Summary

The potential for a rice straw compost market appears substantial. The technology involved is simple and straightforward, and the economics seem especially reasonable. The project converts two environmental wastes -- rice straw waste and livestock waste – into one environmentally friendly product. Mr. Maltby's strong business experience coupled with Dr. Daley's academic and technical expertise lend confidence to the success of the project. The project will utilize student interns and will be used as a student teaching tool. The project has strong community support, including the University of California Cooperative Extension, the Colusa County Economic Development Corporation, and numerous others.

Broken Box Ranch will invest $297,589 of its own resources in cash and in-kind contributions. We recommend awarding the full amount requested ($297,589) to the Broken Box Ranch project. The project's duration will be two years.

"Development of a Commercial Scale Composting Plant in Colusa County"

EXECUTIVE SUMMARY
Provided by Broken Box Ranch

Project Description: The project proposes to develop a commercial-scale in-vessel composting plant in Colusa County, in an effort to resolve two of agriculture's most contentious waste management issues, rice straw burning and livestock manure runoff. Rice straw and livestock waste will be mixed in a 60:40 ratio and placed in an in-vessel composting system to aerobically decompose the organic matter. Preliminary research indicates that this system breaks down these materials into a very homogeneous soil amendment that is suitable for the organic growers market. Within four years of production, the plant will be using 50,000 tons of rice straw in Colusa County and will be poised to begin sister plants in other locations to effectively double the amount of rice straw utilization with every new site. Compost is a sensible solution for the problem of rice straw mitigation. The process decomposes the straw, kills the weed seeds and pathogenic organisms, and returns the nutrients to the soil.

Time length of project and date of commercialization: Funding is requested for 24 months. The proposed commercialized business will be operational within 3 months and fully self-sustaining within 3 years.

Usage of rice straw in tons per year at commercialization: Initially, the plant will use 15,000 tons during the startup phase and will be utilizing 50,000 tons within 4 years of production start.

Project location and number of jobs created at commercialization: The entire project will be constructed outside of Williams, CA. Six positions will be generated.

Total project cost and amount requested from the Rice Fund: The entire project cost is $1,195,989. The project requests $297,589 from the Rice Fund.

Any appropriate additional information desired: This project is a stand alone project submitted by members of production agriculture. It is a grass roots effort, that is not technical but highly effective in converting rice straw into a highly marketable product without any environmental side-effects or waste products. This process works and will begin removing rice straw this calendar year. Moreover, the process is completely replicable in other locations.

Title: *"Rice Straw Export Project"*

Applicant: Kuhn Hay, A California Corporation **Grant Amount: $402,311**

Straw used after Five years: 100,000 tons per year **Project time: Two years**

Proposal Summary

The Japanese rice straw import market is estimated to be about 500,000 tons/year. This offers an extremely favorable opportunity for the export of California Rice Straw. Kuhn Hay proposes to work with the National Hay Association, U.S. Department of Agriculture (USDA), and the Japanese Ministry of Agriculture, Forestry, and Fisheries (MAFF) to open up a market in Japan for California rice straw. The key barrier to entering the Japanese market is Japan's concern about pests and pathogens that might be imported along with the rice straw. Development of a rice straw treatment protocol would provide assurance to the Japanese that imported California rice straw is free of any pests or pathogens.

Kuhn Hay will work together with the National Hay Association, to help evaluate and develop a straw treatment protocol acceptable to the USDA and the Japanese MAFF. Additionally it will pursue development of a Japanese rice straw market, and develop collection, treatment, and distribution infrastructure for rice straw export to Japan. After the first two years of the project, Kuhn Hay proposes to export 25,000 tons of rice straw. In year five of its operation, Kuhn Hay plans to export 100,000 tons of rice straw.

Evaluation Summary

Kuhn Hay has extensive experience with straw collection and processing operations. It also has extensive experience with opening up export markets to Japan. Kuhn Hay has committed to support efforts already underway with the USDA and MAFF to develop a protocol for treating rice straw for export to Japan. The grant award would speed the development of a U.S./Japan export market.

Because ARB is already funding the Anderson Hay project – which includes an export component – reviewers thought the Kuhn Hay funding amount could be reduced without compromising the project's overall objectives to open the market. Once the market is opened, Kuhn Hay and others should have the resources available to enter into it. Kuhn Hay will contribute $2,410,778 of its money to the project. We recommend awarding a grant in the amount of $402,311 (reduced from the $588,170 requested) to Kuhn Hay for this project. The project's duration will be two years.

"Rice Straw Export Project"

EXECUTIVE SUMMARY
Provided by Kuhn Hay, A California Corporation

In response to the 1999-2000 Rice Straw Demonstration Project Fund Invitation for Grant Requests, Jim Kuhn of Kuhn Hay is submitting an application titled Rice Straw Export Project. Kuhn Hay is located in El Centro, California, and has been farming, trucking, compressing, and marketing baled hay and straw products for export since 1979. The primary goal of the project is to successfully expedite the opening of the Japan market to California rice straw. Currently the Japan market is open to importing rice straw from other countries, but has yet to accept the same product from the United States. The secondary goal is to establish the necessary steps for successfully harvesting and compressing large quantities of Sacramento Valley rice straw, resulting in a model that other companies can follow after the project reaches fruition.

The project's five-year plan is to be implemented in three phases. Years one and two will focus on opening the market to Japan, creating a harvest model for 25,000 tons, and completing compressing trials. Years two and three will focus on the construction of a new compressing complex to be located in Sacramento Valley, and the successful harvest of 25,000 tons from the fall 2002 harvest. Years three and four will increase the harvesting, marketing, and capacity of the facility to handle 50,000 tons in year four and 100,000 tons in year five. The applicant is confident that once the market is open, the California rice straw will successfully compete with existing foreign straw sources, resulting in a dramatic projected increase in tons to be sold. This will encourage other companies to pursue similar type projects to fulfill, at minimum, a 300,000-ton market.

Improving access to the Japanese rice straw market will necessitate establishing an acceptable protocol between the United States Department of Agriculture, the California Department of Agriculture, and a division of the Japan Ministry of Agriculture, Forestry, and Fisheries, Japan's Plant, Pests, and Quarantine Department (PPQ). Testing and fumigation methods to ensure no unwanted pests, diseases, or foreign matter will be presented for PPQ's approval. Moisture from weather and soil conditions present another challenge in determining how to efficiently harvest up to 300,000 tons of acceptable export quality rice straw in a four to six week window. From this research, the applicant is committing to construct a model facility, patterned after their El Centro facility, which will ultimately press 100,000 tons of California rice straw. One large benefit of this pilot project is that others will likely construct similar facilities to utilize more of the California rice straw once the market is open.

By summer 2002, Kuhn Hay intends to build a $2,637,000.300 compressing and straw storage facility in the Sacramento Valley for handling 25,000 tons of straw. The estimated cost to establish the market and begin to construct the facility is $6,124,149.00 of which the applicant is requesting $402,311 in matching funds from the Rice Straw Demonstration Project Fund. By 2004, the facility will be increased to handle 100,000 tons, with additional storage and equipment costing in excess of $4,410,000.00. The projected jobs that will be created will initially include 49 seasonal and 18 full time positions, increasing to 190 seasonal and 63 full time positions by 2004.

With the compressing technology and marketing channels established, this proposed project provides proven solutions, applicable to other operations, to substantially reduce the burning of California rice straw.

Title: ***"Rice Straw Silage Production for Cattle Feed"***

Applicant: Smith Ranches **Grant Amount: $50,100**

Straw used after Five years: 20,000 tons per year Project time: One year

Proposal Summary

The proposed project will involve collecting 1,900 tons of rice straw and converting it into silage (animal feed). The silage will be fed to 500 head of brood cows between November 2000 to March 2001. The desirability of the silage to the cows will be evaluated, and recommendations for further commercialization of the product will be provided.

Smith Ranches is a cattle farm operation located in Yuba County. The project team includes cattle farmer Mr. Henry Smith, silage expert Mr. Jud Zentmeyer, and University of California Farm Advisor Mr. Glenn Nader.

Evaluation Summary

The Smith Ranches project is a research project aimed at evaluating the logistics and effectiveness of producing rice straw silage for cattle feed. There are about 32,000 beef cows present in the Yuba/Sutter/Butte Counties area during the winter period. This represents a substantial market for rice straw silage if this project succeeds. The technology is simple and the economics could be favorable for using upwards of 20,000 tons/year of rice straw.

The experience of the project team, together with the resources the project has to offer, make this a reasonably leveraged proposal. The project could likely lead to the commercialization of rice straw silage for cattle feed.

Smith Ranches will provide $447,200 of matching funds and resources for the project. Staff recommends a full grant award of $50,100 to Smith Ranches for this project's one year duration.

"Rice Straw Silage Production for Cattle Feed"

EXECUTIVE SUMMARY
Provided by Smith Ranches

This project takes two years of field research on rice straw silage and will implement it in a commercial cattle feeding operation. The process of producing rice straw silage improves the palatability and nutritional quality over traditional dry baled straw for livestock usage. Increased intakes of rice straw silage averaged thirty-six pounds per head per day on a free choice ration. The digestible protein content can range as high as nine percent on a dry matter basis.

Due to the previous two years of research funded by the California Rice Research Board, this business will immediately commercialize the rice straw silage feeding process. Under this one year project, Smith Ranches will produce 1900 tons of rice straw silage this fall. It will be fed to 500 mature beef cows from November 2000 to March 2001. Commercial production information will be collected and ranch demonstration day will be conducted in the spring in conjunction with the University of California Extension Service to openly expose other beef and dairy operators to this new technology implemented at Smith Ranches. Based on the adoption of this technology by other cattle operations based on the Smith Ranches commercial model, according to University of California projections commercial use of rice straw could be as high as in the Northern Sacramento Valley. The rice straw silage will be produced in the District ten area northeast of Marysville and fed at the Smith Ranches feeding facility in Browns Valley. This project will create one new job in the local economy. The total cost of the commercialization of rice straw silage project to Smith Ranches is $497,300. The California Air Resources Board will contribute $50,100 to implement the start up of this innovative and well researched process.

Title: ***"Production of Ethanol From Sacramento Valley Rice Straw"***

Applicant: Arkenol Holdings, L.L.C. **Grant Amount: $100,000**

Straw used after Five years: 264,000 tons per year **Project time: One year**

Proposal Summary

The proposed project will involve defining critical unit operations necessary to produce ethanol from rice straw on a commercial scale. The project will include evaluation of processes such as cellulose to sugar reaction kinetics, filtration operations, acid/sugar chromatographic separation, and feedstock grinding equipment.

Approximately 3-5 tons of rice straw will be used during this 12-month program. A commercial ethanol plant located in the Sacramento Valley could use upwards of 130,000 tons per year of rice straw.

Arkenol Holdings L.L.C., is an engineering, research, and development company formed in 1992 to commercialize a patented concentrated acid hydrolysis process for the production of bio-based fuels and chemicals from lignocellulosic feedstocks. The company is aiming to develop a rice straw to ethanol plant located in the Sacramento Valley.

Evaluation Summary

As a starting point, this proposal will use process data gathered from work previously funded through ARB's rice grant program. It will study the ethanol production process over a time span sufficiently long to demonstrate the rice straw to ethanol process. It will define the critical unit operations related to the acid hydrolysis filtration process over a wide range of operating conditions. It will attempt to mimic actual operating conditions expected at a commercial scale ethanol plant. The applicant demonstrates an excellent knowledge of process engineering needs and potential technical barriers, and provides considerable evidence of technological viability. This technology shows excellent potential for large-scale use of rice straw.

Arkenol originally requested $629,000 for a more scaled up research project. Although the reviewers thought the proposal had substantial merit, the reviewers felt the project was still too far from commercialization. Also, ARB has previously funded a similar Arkenol project for $519,000. For these reasons, reviewers thought a scaled down project was appropriate at this stage in the project's development.

Arkenol will provide matching funds of $100,000 for the project. Staff recommends a reduced grant award of $100,000 to Arkenol for this project's one year duration.

"Production of Ethanol From Sacramento Valley Rice Straw"

EXECUTIVE SUMMARY
Provided by Arkenol Holdings, L.L.C.

This proposal presents an innovative process for the large scale use of Sacramento Valley rice straw to produce ethanol, a renewable transportation fuel. Ethanol is used as neat fuel or oxygenate in reformulated gasoline. The U.S. consumption of ethanol is well over 1 billion gallons per year and expected to grow with the phasedown of MTBE use. It is largely produced in the United States from corn dextrose as raw material.

The Applicant, Arkenol Holdings, L.L.C. ("Arkenol"), a California based private company, proposes to demonstrate the production of ethanol from rice straw grown in the Sacramento Valley. This proposal will maximize use of available preliminary engineering design data, existing equipment, qualified and knowledgeable staff, and Arkenol's proven patented technologies for the lignocellulosic degradation of various materials, such as rice straw, into lignin, cellulose and hemicellulose.

In Arkenol's process, the cellulose and hemicellulose are converted into chemicals such as ethanol and citric acid in a process designed to optimize conversion of all process streams to marketable by-products. The silica may be extracted from the lignin fraction and converted to marketable by-products. The lignin is neutralized and sold as boiler fuel or soil amendment. The gypsum is sold as soil conditioner and the cell-bodies from the fermentation process marketed as animal feed.

This proposal consists of a program which will rigorously define the critical unit operations related to the filtration process over a wide range of operating conditions attempting to mimic actual operating conditions expected at commercial scale. The selection of these conditions is intended to remove as many unknowns as possible so as to reduce perceived Engineering Procurement & Construction (EPC) risk to levels more consistent with project economics. Using rice straw from the Sacramento Valley as a feedstock, this program will use process data from previous work as a starting point from which to study the process over time span sufficiently long to also demonstrate the use of recycle in the process. Approximately 3-5 tons of rice straw will be used during this 12 month program and about 132,000 tons per year for the commercial plant to be located in the Sacramento Valley.

The program will focus on the filtration unit operations associated with the 1st and 2nd stage reactors of the Arkenol technology to better define parameters crucial to scale-up and reduced production costs for ethanol. In addition, the program will also investigate alternate equipment for the grinding of the feedstock.

The construction of the full scale plant will employ approximately 150 workers during construction, and about 60 workers will be required for on-site plant operations and maintenance. Off-site jobs related to the handling of the rice straw and other ancillary jobs will also result from the development and construction of the facility. The total project cost is $ 200,000. An amount equal to $ 100,000 or 50% of the total project cost, is requested from the Rice Fund. Matching funds will be provided by Arkenol through cash and in-kind contributions

APPENDIX A

Executive Summaries for the MBI International and Sierra Economic Development District Proposals.

APPENDIX B

Grant funding criteria specified in February 2, 2000, report entitled “The Rice Straw Demonstration Project Fund – Program Description and Invitation for Grant Requests Fiscal Year 1999-2000.”